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FEDERAL COMMUNICATIONS COMMISSION
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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Parts 2 and 15	)	
of the Commission's Rules	)	ET Docket No. 94-124
To Permit Use of Radio	)	RM-8308
Frequencies Above 40 GHz	)	
for New Radio Applications	)	

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COMMENTS

AT&T Corp. ("AT&T") respectfully submits the following comments in response to the Commission's Notice of Proposed Rulemaking ("NPRM"), FCC 94-273, released November 8, 1994.

AT&T supports the proposal in the NPRM to open 16 GHz of the radio spectrum above 40 GHz (called millimeter wave frequencies) to commercial use, divided into approximately equal separate segments for licensed and unlicensed uses[1] and to permit commercial use in another two GHz.[2] Licensed services and unlicensed services using these newly available frequencies will provide new and better communications capabilities to the people of the United States.

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[1] These 16 GHz will continue to be available for existing and future government use.

[2] These two GHz are already entirely allocated to non-government use.

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List A B C D E

Two potentially valuable licensed uses of the newly available 40.5-42.5 GHz spectrum, as an alternative to fiber, are to connect PCS base stations to the public switched network and to provide transport within that network at SONET speeds. The first of those uses can be a key to making PCS affordable because low cost millimeter wave techniques can be used over distances of several kilometers, despite the fading impact caused by rain. The second suggested use would apply where a radio link would be more cost effective than fiber, such as very short distances over terrain not conducive to laying fiber. On the unlicensed side, the millimeter wave spectrum is well suited to computer-to-computer communications, wherever people are working together and need to share information, both directly between the machines[3] and indirectly through a privately controlled coordination point.[4]

The Commission's proposals to separate licensed and unlicensed uses, and within the unlicensed bands further to separate vehicle radar systems from other unlicensed uses, are sound. AT&T shares the Commission's judgment (NPRM, ¶ 19) that the difficulty of resolving interference problems between licensed services and the potentially large

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[3] Conference rooms and airport waiting areas are just two examples.

[4] Examples are office, industrial and educational campuses.

number of unlicensed devices operating in the millimeter wave spectrum makes separation advisable.[5]

The Commission's proposal regarding which frequency bands are allocated to the licensed, general unlicensed, and vehicle radar uses all also should be adopted. The considerations discussed by the Commission (NPRM ¶ 17) amply support the chosen outcome.

The Commission proposes to divide each licensed block into contiguous halves, as is done in the 28 GHz band (NPRM ¶ 23). In the 40.5-42.5 GHz segment, the focus of AT&T's Comments regarding licensed services, this approach is correct. It facilitates the further subdivision into paired blocks to facilitate duplex (two-way) transmission, on which the Commission requested comment (id.). Duplex transmission is the most effective way that this portion of the spectrum can be used. Moreover, efficient duplex use would be facilitated by dividing each half (i.e., 40.5-41.5 GHz and 41.5-42.5 GHz) into twenty 50 MHz channels, which should be paired, with one channel in each half

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[5] While the Commission's proposal to separate the vehicle radar systems from the unlicensed uses was based on fear of interference to the former, AT&T is concerned about interference in the reverse direction, such as from vehicle radar systems operating in parking lots or on campus roadways to nearby mobile computers attempting to communicate with each other.

separated by one GHz.[6] Thus one channel would be used for one direction of transport and the other for the reverse direction. Although channels as small as 50 MHz should be quite useful, the rules should permit a licensee to acquire broader channels, such as pairs of contiguous 100 MHz or 150 MHz channels.[7]

AT&T has only one comment on the proposed technical standards in the NPRM (¶¶ 33-46). The proposed power limit for licensed transmitters of 16 dBW equivalent isotropically radiated power (EIRP) can be significantly raised closer to 36 dBW. Because very narrow antenna beams are achievable at millimeter wave frequencies, this higher EIRP would not create significant interference between nearby systems. The performance of radio links at a 36 dBW EIRP level will often be of significantly higher quality than at the Commission's proposed level. An across-the-board higher power level, rather than potential for a case-by-case grant per the NPRM (¶ 33), would give designers more certainty and reduce the administrative burden on applicants and the Commission.

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[6] For example, the channel from 40.50 to 40.55 GHz would be paired with the channel at 41.50 to 41.55 GHz.

[7] If, for example, each 1000 MHz half were allocated 100 MHz each to five PCS licensees, there would still be one GHz left for other uses such as the SONET transport discussed by AT&T. A 50 MHz channel could easily provide SONET transport at 155 Mb/s.

Footnote 9 in the NPRM, wherein the Commission noted that other parts of the world are also considering commercial uses of millimeter wave technology, suggests yet another way in which the Commission can serve the public interest regarding this spectrum. In addition to opening up the millimeter wave spectrum to commercial use, the Commission should do everything it can to achieve similar allocations of that spectrum internationally. A starting point would be a worldwide (or at least European) allocation of 59-64 GHz to wireless local area networks, which comports with the Commission's proposal in this docket to allocate 59-64 GHz to general unlicensed wireless devices.[8] WRC-97 would be a good vehicle to achieve this outcome, or at least

[8] CEPT Recommendation T/R 22-03 already provisionally recommends 59-62 GHz for Cordless Local Area Networks.

to begin movement in that direction. A uniform international allocation would permit American manufacturers to offer products usable everywhere and would give users the ability to use their equipment abroad as well as at home.

Respectfully submitted,

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